

TV-16

Cheniere Au Tigre Shoreline Demonstration Summary Data and Graphics



Barrilleaux, T. 2003. *TV-16 Cheniere Au Tigre Shoreline Demonstration Summary Data and Graphics*, Louisiana Department of Natural Resources, Coastal Restoration Division, Baton Rouge, Louisiana 14 pp.

Cheniere Au Tigre (TV-16)

Project Overview:

The Cheniere au Tigre shoreline demonstration project is a shoreline protection project from the 6th priority list of the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA). The project area is located along the shoreline of the Gulf of Mexico, approximately 15 mi (24 km) south of Intracoastal City, Louisiana, in Vermilion parish (figure 1). The proposed project design involves the construction of up to ten rock rip-rap breakwater segments, each 200 ft (61 m) long, with a 120 ft (36 m) gap between segments. Breakwater segments will be constructed parallel to the shoreline at a distance of 200 ft (61 m) offshore. Settled elevation of the rock segments will be 3.5 ft (1 m) (North American Vertical Datum [NAVD] of 1988). The project design utilized results from a previous breakwater project employed at nearby Holly Beach, Louisiana (Underwood et al. 1999). Specifically, the current project will use longer breakwaters with smaller gaps between breakwaters, set at a distance as much as 300 ft closer to the shore than those constructed for the Holly Beach project, in order to further reduce wave energies and allow sufficient sediment availability for the westernmost areas of the project. The actual number of breakwater segments constructed will be dependent on the costs of the rock rip-rap and construction, resulting in a maximum total project distance parallel to the shoreline of 3,080 ft (939 m). In the case that construction costs prohibit the maximum project distance, construction will proceed, with a minimum of 4-5 breakwaters, from the eastern boundary of the project area, allowing an adequate buffer distance from an oyster lease present to the east of the project area.

The project area is comprised of approximately 103 acres (41.7 ha), occurring as 38 acres (15.4 ha) of open water, 44 acres (17.8 ha) of brackish marsh, 4 acres (1.6 ha) of coastal beach, 12 acres (4.9 ha) of upland scrub/shrub habitat, and 5 acres of upland forest (2.0 ha). Vegetation occurring adjacent to the shoreline is characterized by *Ambrosia* spp. (giant ragweed), *Acacia smallii* (sweet acacia), *Geranium carolinianum* (wild geranium), *Galium* spp. (bedstraw), and *Opuntia compressa* (prickly pear cactus).

Construction was initiated in July 2001 and completed in September 2001.



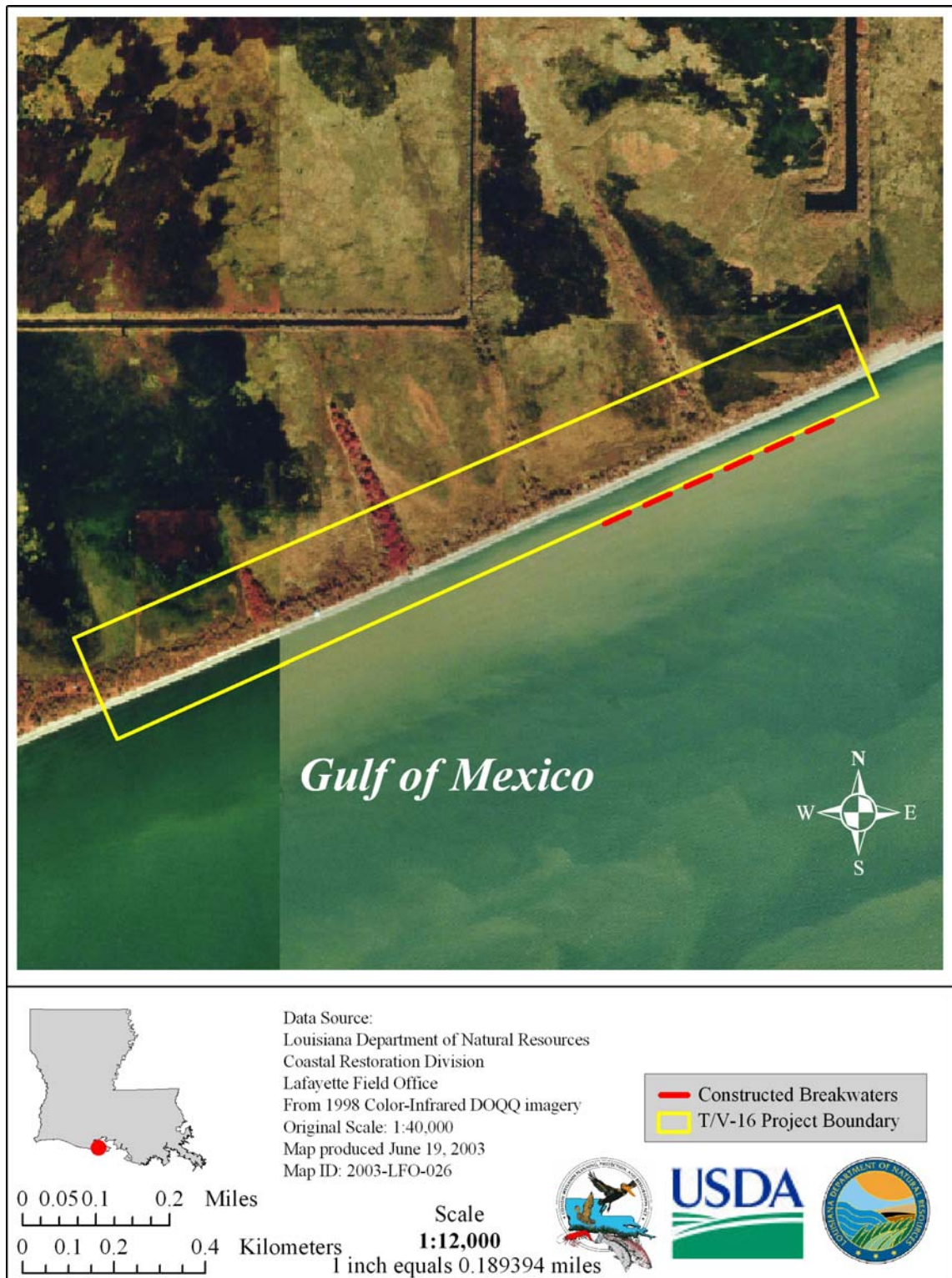


Figure 1. Location of the Cheniere au Tigre (TV-16) shoreline protection project and the locations of the constructed rock breakwaters.



Cheniere Au Tigre

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Project Objectives:

1. To protect the beaches and interior brackish marshes of Cheniere au Tigre through the use of segmented breakwaters.

Specific Goals:

The following goals will contribute to the evaluation of the above objectives:

1. Protect the acreage of the interior brackish marshes by reducing the rate of beach erosion.



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Monitoring Elements:

Aerial Photography: To measure land and water areas and to document long term shoreline changes, color-infrared aerial photography (1:6,000 scale) will be acquired by the USGS National Wetlands Research Center (NWRC) updrift, downdrift, and in the project area. The photography will be georectified by NWRC personnel using NWRC standard operating procedures (Steyer et al. 1995, revised 2000). The photography was obtained prior to project construction in 2000 and will be acquired post-construction in 2005. Additional photography may be obtained in response to storm events.



Cheniere Au Tigre (TV-16) Aerial Photography

Aerial photography was collected during fall 2000 and will also be collected in 2005 to document long term shoreline changes.

Figures:

Figure 2. 2000 photo mosaic with overlaid project boundary acquired approximately 10 months prior to construction.



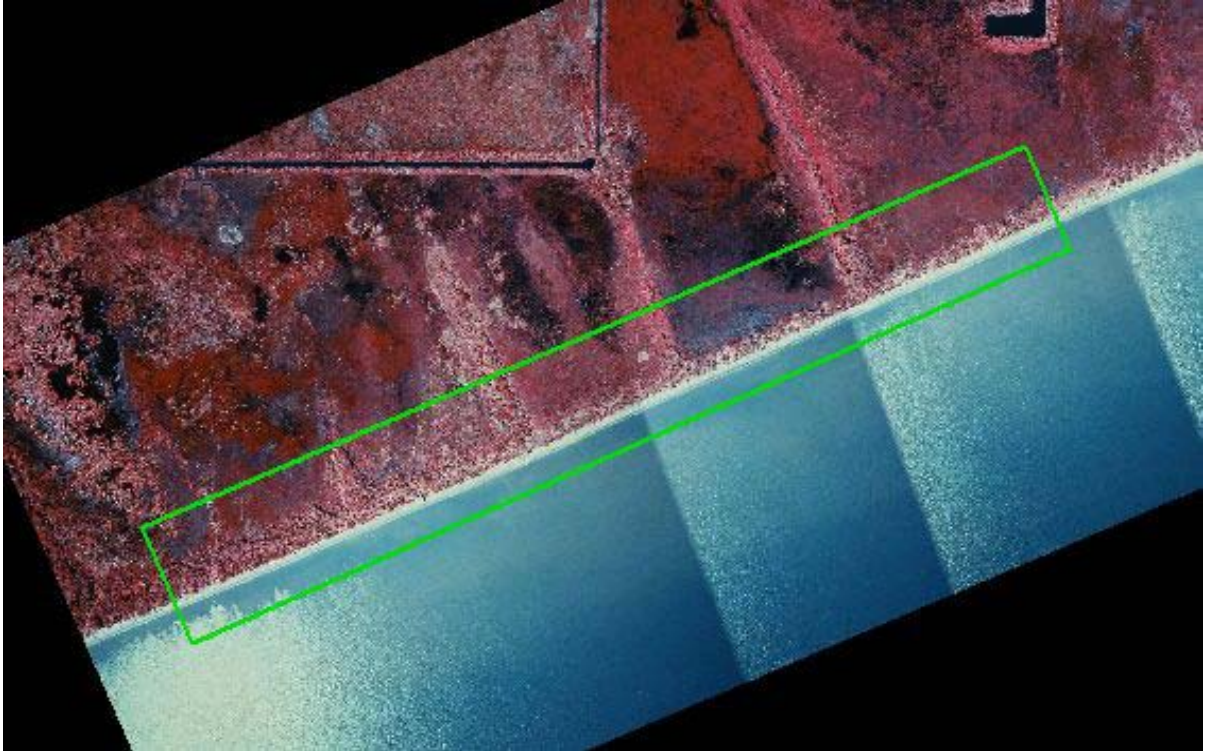


Figure 2. 2000 photo mosaic with overlaid project boundary acquired approximately 10 months prior to construction.



Cheniere Au Tigre (TV-16) Shoreline Change

- Shoreline Position was documented in 2001. Shoreline change rates will be calculated following the post-construction data collection and will then be presented.

Figures:

Figure 3. Shoreline position (seaward edge of shoreline vegetation) documented in April 2001 using differentially corrected Global Position System data.



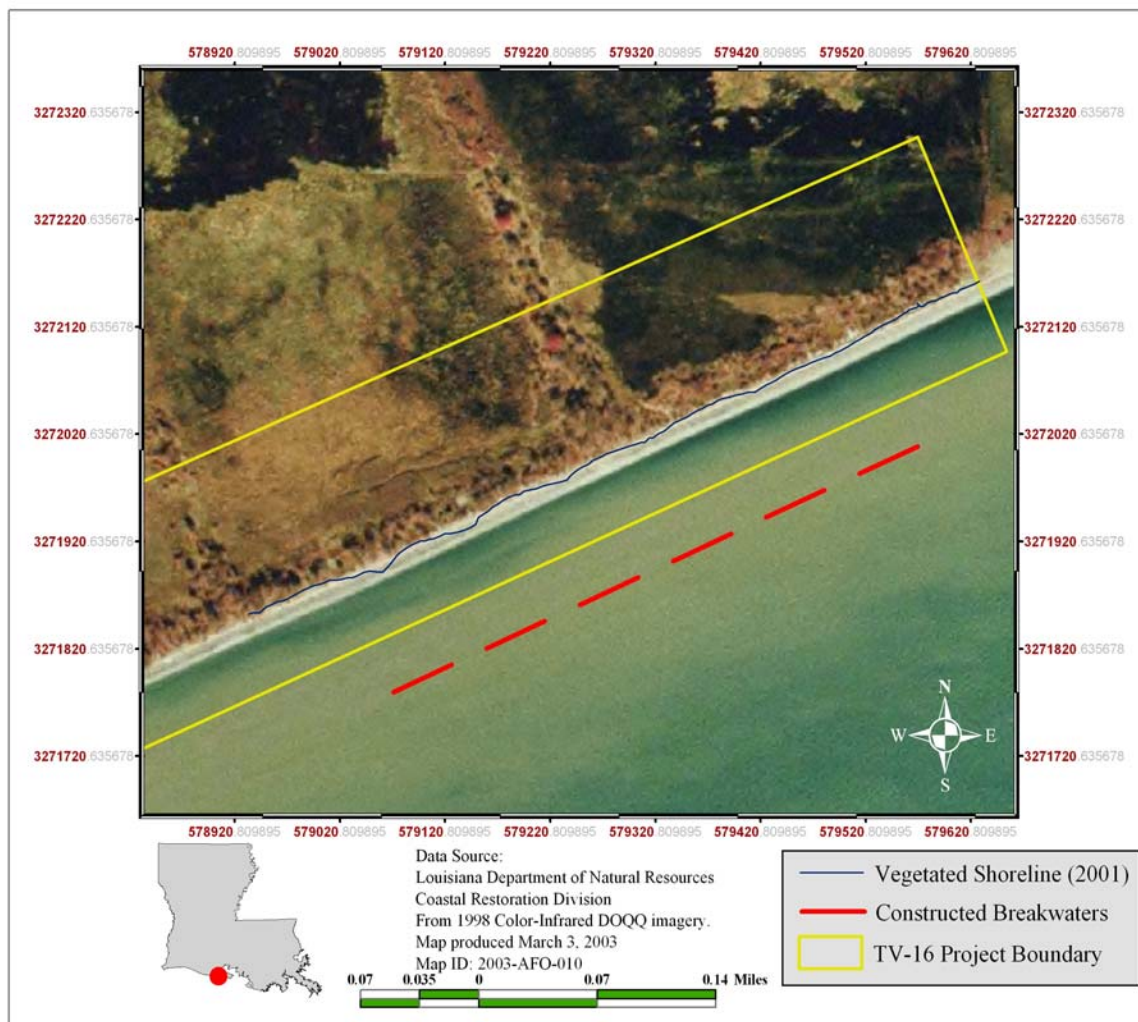


Figure 3. Shoreline position (seaward edge of shoreline vegetation) documented in April 2001 using differentially corrected Global Position System data.



Cheniere Au Tigre (TV-16)

Preliminary findings

Aerial Photography:

Pre-construction aerial photography was acquired in 2000; however, no post-construction photography has been collected to date.

Shoreline Position:

Pre-construction position was documented in 2001 and, although no subsequent shoreline information has been collected, qualitative observations indicate that the shoreline is prograding and sediment is accumulating both along the shoreline and immediately shoreward of the breakwater segments. Similar responses have been observed at the Holly Beach Breakwaters (CS-01) and Raccoon Island (TE-29) projects.





Figure 4. Segmented rock breakwater showing foreshore accreted sand approximately 6 mo. following construction.





Figure 6. Shoreline of Cheniere au Tigre.





Figure 7. Shoreline of Cheniere au Tigre (aerial view) illustrating sediment accretion behind the rock breakwaters.





Figure 8. Close-up illustration of sediment accretion behind one of the rock breakwater segments.

